

REMARKS

Claims 3-5, 8-20, 27-28, and 35-42 are pending in the Application.

Claims 3-5, 8-20, 27-28, and 35-42 stand rejected.

Claims 35-38 and 40-41 are deleted herein without prejudice.

Claims 43-48 are added herein.

I. PRIOR ART

On July 22, 2002, Examiner and Applicant conversed telephonically. As an initial matter, Applicant and Applicant's attorney appreciates the opportunity to discuss the case with the Examiner and thank the Examiner for his efforts in examining the Application.

During this July 22 telephone call, Applicant discussed in general terms some of its own products and uses of its products. Applicant had previously disclosed these products in Applicant's Information Disclosure Statement filed in this Application on January 4, 2002 ("Applicant's IDS"). So as to make sure the Examiner fully understands the use of these products, Applicant submits the following:

A. Applicant's BMTC-7 Product

More than one year before the filing of the present Application, Applicant sold a product, which it designated as its BMTC-7 product; the technical data for this product was disclosed in Applicant's IDS, at Reference Designation APA ("Reference APA").¹ The BMTC-7 product contains Applicant's BMET-1 microbes, which, as noted in the Application, are microbes falling within the scope of the bacteria, as presently claimed. The BMTC-7 product also includes surfactant used in a bacteria/surfactant weight ratio amount as presently recited within the claims.

The BMTC-7 product was created to improve the maintenance procedure for the 180-gallon holding tanks (also referred to as black water retention tanks) used to store toilet wastes on Amtrak's extended trip and transcontinental "Super Liners." The toilet tank systems utilized on these trains included a reservoir of fresh water that was connected to a number of toilets.

¹ Reference APA further discloses Applicant's BMTT-2010 product (which modified product is now designated as Applicant's MTC-2010 product). Applicant's MTC-2010 product is an embodiment of the claimed invention of the Application. So as there to be no confusion, Applicant's BMTT-2010 product, including its disclosure in Reference APA, is not prior art to the present Application.

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Utilizing a pressurized flush system, each of these toilets would flush their contents into the black water retention tanks. At the beginning of a 120 day period, the reservoir was charged with clean water, and the black water retention tank was empty. Throughout the 120 day period, the toilets were used in normal operation. As the fresh water from the reservoir was used, the reservoir was replenished with more fresh water. As the black water retention tank became filled the liquids (water, urine, *etc.*), the black water retention tank liquids were drained. At no time during operation of this tank toilet system were the liquids in the black-water retention tank circulated for use as flushing liquids. At the conclusion of the 120-day period, Amtrak would conduct a 120 day refurbishment of long-haul (transcontinental) passenger coaches, which include maintenance for the black water retention tanks.

Before Amtrak's use of Applicant's BMTC-7 product, Amtrak cleaned its black water retention tanks by draining the liquids and then filling these black water retention tanks with a 20% acid/water solution. Amtrak would then let the black water retention tanks (full of the 20% acid/water solution) sit in the maintenance yard for a day or two. Applicant understands from discussions with Amtrak that it did so to remove sludgy build-up of fecal and tissue material that stuck to the holding tank walls (as this material was sucked into the tank at approximately 100 mph by the pressurized flush system). After a day or two, Amtrak would then drain the 20% acid/water solution from the black water retention tank and clean the tank out. Once the black water retention tank was cleaned out, the railroad car was put back into service. From there, the cycle would repeat.

Applicant understands from its discussions with Amtrak that Amtrak had concern of the risks associated with its use of acid. It was believed to be potentially dangerous for its employees, and had other undesirable characteristics such as corrosive fumes and other malodors due to the urine and fecal material drained from the black water retention tanks with the acid solution.

Applicant's BMTC-7 product was designed and is now used as the soak-cleaner in Amtrak's black-water retention tanks. In lieu of using the 20% acid/water solution, the BMTC-7 product is filled into black water retention tanks during the procedure outlined above. The BMTC-7 product is cleaned from the black water retention tanks before being put back in operation.

B. Applicant's BMTB-2010 Block and BMRT-3 Surfactant

More than one year before the filing of the Application, Applicant sold time release blocks of microbes and enzymes designed for uses for grease traps, municipal lift stations, and septic tanks. Applicant has designated this product as its BMTB-2010 block. The technical data for this product was disclosed in Applicant's IDS, at Reference Designation ARA ("Reference ARA"). Bio-Buster of California and SC Johnson Co. also sell time release blocks of microbes and enzymes designed for these uses. (Applicant's note that another time release formula product is disclosed in the *Tobey* reference; however, as discussed *infra* this reference is not prior art to the Application). Applicant understands the Bio-Buster and SC Johnson time release blocks were on sale more than a year before filing the Application.

Applicant's BMTB-2010 block includes BMET-1 microbes. The BMTB-2010 product also contains a surfactant. Applicant further notes, as disclosed in Reference ARA, additional surfactants are put into the grease traps and septic tanks with the BMTB-2010 block by the concurrent use of Applicant's BMRT-3 surfactant,² which also contains the BMET-1 microbes. Moreover, Applicant understands the time release products of Bio-Buster and SC Johnson similarly include bacteria and surfactants. Applicant's BMTB-2010 blocks and its BMRT-3 surfactant are not added to flushing liquids in tank toilet systems, are not used in recirculation toilets, nor have they ever been. Applicant understands the same is true respecting the Bio-Buster and SC Johnson time release blocks.

II. REJECTION UNDER 35 U.S.C. § 112, ¶ 2

The Examiner has rejected Claims 3-5, 8-20, 27-28 and 42 under 35 U.S.C. § 112, ¶ 2, as being indefinite for failing to particularly point out and distinctly claim the subject matter for which protection is sought. Paper No. 7, at 2.

² Applicant's BMRT-3 surfactant is a premium bacterial based cleaner designed for cleaning floors, such as in restaurants, cafeterias, and institutional kitchens. This product too has been sold by Bio-Sys more than one year before the filing of the Application.

In Paper No. 7, Examiner raised an indefiniteness objection based upon Applicant's recitation of the terms "small tank toilet system" and "small tank system" in some of the claims.³ Paper No. 7, at 2-6. To advance prosecution, Applicant has amended the claims herein so that as to delete the use of the term "small tank toilet system" in its entirety. Applicant now utilizes the term -tank toilet system—throughout the claims.

Applicant understands from its July 22 telephone interview and Examiner's summary thereto ("Paper No. 8") that this deletion of the term "small" overcomes this indefiniteness issue. Paper No. 8, at 2.

In Paper No. 7, Examiner rejected Claim 27 for want of antecedent basis. Paper No. 7, at 6. Applicant has amended Claim 27 herein to delete the term "the methyl salicylate" from the claim. Applicant further notes that Claim 19 had a similar issue, and, thus, Applicant has similarly amended this claim. Applicant respectfully asserts that these amendments overcome this antecedent basis issue.

In Paper No. 7, Examiner further rejected claim 27 for indefiniteness. Paper No. 7, at 6. Applicant has amended Claim 27 herein to replace "by" with --in an amount of--. Applicant further notes that Claim 19 had a similar issue, and, thus, Applicant has similarly amended this claim. Applicant respectfully asserts that these amendments overcome this indefiniteness issue.

Applicant has now addressed the bases under 35 U.S.C. § 112, ¶ 2, for which the Examiner rejected each of Claims 3-5, 8-20, 27-28, and 42, and Applicant has presented these claims in condition for allowance. Accordingly, Applicant respectfully requests the Examiner withdraw the rejections of Claims 3-5, 8-20, 27-28, and 42 under U.S.C § 112, ¶ 2.

III. REJECTION UNDER 35 U.S.C. § 112, ¶ 1

The Examiner has rejected Claims 3-5, 8-20, 27-28 and 35-42 under 35 U.S.C. § 112, ¶ 1, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, and with which it is most nearly connected, to make and/or use the invention. Paper No. 7, at 11-12.

³ Applicant notes that in its Amendment Under 37 C.F.R. § 1.111, dated July 1, 2002, Applicant referred to small tank toilet systems on occasion as "small tank systems." Such reference was

To facilitate prosecution, Applicant has amended the claims to replace “flushing fluid” with --flushing liquid--. Applicant understands from its July 22 telephone interview with Examiner and Paper No. 8 that in response to this amendment, Examiner will withdraw this enablement rejection. Paper No. 8, at 2.

Applicant has now addressed the bases under 35 U.S.C. § 112, ¶ 1, for which the Examiner rejected each of Claims 3-5, 8-20, 27-28 and 35-42, and Applicant has presented these claims in condition for allowance. Accordingly, Applicant respectfully requests the Examiner withdraw the rejections of Claims 3-5, 8-20, 27-28 and 35-42 under U.S.C § 112, ¶ 1.

IV. REJECTIONS UNDER 35 U.S.C. § 102(e)/103 BASED UPON TOBEY

In Paper No. 7:

(a) The Examiner rejected Claims 3-4, 8, 11-20, and 42 under 35 U.S.C. § 102(a) as being anticipated by United States Patent No. 6,325,934, issued to Tobey (“Tobey”). Paper No. 7, at 6.

(b) The Examiner rejected Claims 5, and 35-41 under 35 U.S.C. § 103(a) as being obvious over *Tobey* in view of United States Patent No. 4,655,794, issued to Richardson, *et al.* (“*Richardson*”). *Id.*

(c) The Examiner rejected Claims 9-10 under § 103(a) as being obvious over *Tobey* in view of United States Patent No. 6,245,552, issued to Glendening, *et al.* (“*Glendening*”). *Id.*, at 7.

(d) The Examiner rejected Claims 3-5, 8-20, and 35-42 under § 103(a) as being obvious over United States Patent No. 3,720,606, issued to Horney, *et al.* (“*Horney*”) in view of *Tobey*. *Id.*

(e) The Examiner rejected Claims 28 under § 103(a) as being obvious over *Tobey* in view of United States Patent No. 3,927,200, issued to Yoshimura, *et al.* (“*Yoshimura*”). *Id.*, at 7-8.

(f) The Examiner rejected Claims 28 under § 103(a) as being obvious over *Tobey* in view of United States Patent No 5,275,943 issued to DiTuro (“*DiTuro*”). *Id.*, at 8.

inadvertent; Applicant intended to utilize the term “tank toilet systems,” not “tank systems.” Accordingly, Applicant has amended the claims to reflect this.

(g) The Examiner rejected Claim 28 under § 103(a) as being obvious over *DiTuro* in view of *Tobey* and United States Patent No 5,397,699 issued to Davis, *et al.* ("*Davis*"). *Id.*, at 8-9.

Thereafter, Examiner reconsidered his rejection of Claim 42 as anticipated by *Tobey*, and agreed to withdraw this § 102 rejection. Paper No. 8, at 1.

Applicant respectfully traverses the remaining §§ 102 and 103 rejections.

A. *Tobey* Is Not Prior Art To The Present Invention

The Applicant respectfully asserts that *Tobey* (upon which all of the above referenced rejections are based, at least in part) is not prior art to the present invention, since the Applicant invented the claimed invention before the filing date of *Tobey*. This is supported by the four declarations by the inventors under 37 C.F.R. § 1.131 attached hereto, which provide facts showing that the inventors invented the claimed invention before the May 9, 2000 filing date of *Tobey*.⁴ As a result of the foregoing, rejections under §§ 102 and 103 cannot be predicated on *Tobey*. MPEP § 2141.01.

B. Even Were *Tobey* Prior Art, Claims 3-4, 8, and 11-20 Are Not Anticipated by *Tobey*

Nevertheless, with respect to Claims 3-4, 8, and 11-20, each of these claims include, among other things, a tank toilet system that is a recirculation tank toilet system and a tank toilet system that is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems. In Paper No. 8, Examiner acknowledged that *Tobey* does not teach the recirculation of the flushing liquid. Paper No. 8, at 1.

Tobey further does not disclose a recirculation tank toilet system. A recirculation (or recirculating) tank toilet system is well understood by a person of ordinary skill in the art in the field of the Application to be a toilet system in which the liquids are recovered from the toilet waste and thereafter reused to rinse the toilet bowl. *See, e.g.*, United States Patent No. 3,567,032, issued to Kemper, United States Patent No. 3,776,107, issued to Molus, and United States Patent No. 5,045,188, issued to Tsai. Applicant used this term consistent with this understanding. *See, e.g.*, Application, at 11-12, & Figure 1A-1B.

⁴ For the Examiner's convenience, excerpts from Exhibits A-D of the Declaration of Brian Doege Under 37 C.F.R. § 1.131 have been attached on a separate page to this Amendment.

Tobey further does not disclose a tank toilet system that is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems.

These elements cannot be discounted or ignored.⁵ Persons of ordinary skill in the art of the Application would understand that recirculation tank toilet systems, particularly those used in airplanes, busses, and trains, are different and encounter unique problems, as compared to septic tank systems (which are stationary in the ground) and systems utilizing black water retention tanks (which are stationary during maintenance). Rather, transportation recirculation tank toilet systems are filled and emptied in cycles ranging anywhere from hours to days, are constantly moving, and are constantly agitating the water to recyle flushing liquids through the toilet.

A person of ordinary skill in the art would understand that in stationary tanks (such as in a septic tank system) boundary layers are formed in the contents of the tank. This boundary layer phenomenon is reflected in *Tobey*. *Tobey*, col. 8, ll. 1-4 & 51-53, & Figure 1. A simplified explanation of boundary layers would include: (1) the lowest layer, where there is usually solid material and an oxygen poor environment in which anaerobic bacteria slowly break down the waste material; (2) the second layer, which is more oxygen rich and supports a more vigorous aerobic bacterial colony; and (3) the top layer, which is frequently agitated from flushing additional liquids into it. This top layer is also where malodors are most likely produced that can escape to the atmosphere and cause discomfort to anyone who is close. Odors in a septic tank that is well balanced are generally not too much of a problem because there is little agitation to release them and if the tank is well fed with a continuous bacterial supply, odors are contained under the boundary layers and consumed by the bacterial action. In other words, the lower layers are where the odor causing problems would arise; however, since these are not agitated this problem generally does not develop.

On the other hand, in a transportation recirculation tank toilet system, boundary layers do not exist, as there is almost constant agitation due to sloshing. Moreover, continuous recirculation of the waste fluid further agitates the contents and gaseous odors are easily released. These are some of the problems that have plagued airlines, buses, and railroad companies ever

⁵ Applicant notes that *Tobey* further fails to disclose or teach other elements of the claims, as discussed in detail *infra*. These elements likewise cannot be discounted or ignored.

since they started utilizing recirculation tank toilet systems and collected the waste for later pumping.

Consequently, for at least the aforesaid reasons, the Applicant respectfully contend that *Tobey* does not teach or suggest all of the limitations of Claims 3-4, 8, and 11-20. Anticipation requires that a single prior art reference teach the identical invention as recited in the claim. MPEP § 2131. The Examiner is respectfully reminded that, under MPEP § 707.07(f), the Examiner is required to address all material traversed by Applicant. Therefore, the Examiner is required to specifically address each and every one of Applicant's assertions that the claims are not anticipated by *Tobey*; otherwise, the Examiner has not adequately rejected these claims and these claims are therefore patentable over the cited prior art.

Because, for at least the aforesaid reasons, *Tobey* does not disclose the invention of any of claims 3-4, 8, and 11-20. Thus, these claims allowable under 35 U.S.C. § 102 over *Tobey*.

C. Even Were *Tobey* Prior Art, Claims 3-5, 8-20, 27-28, 39-40, and 42 Are Not Obvious Based Upon *Tobey*, Either Alone and In Combination with *Richardson*, *Glendening*, *Horney*, *Yoshimura*, *DiTuro*, or *Davis*

1. The Cited Prior Art Fails to Disclose All Elements of the Claimed Invention

As to the § 103 rejections of claims 3-5, 8-20, 27-28, 39-40, and 42 that involved *Tobey*,⁶ as noted above, *Tobey* does not disclose or teach the recirculation of the flushing liquid, a recirculation tank toilet system, and a tank toilet system that tank toilet system that is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems. All of these are elements of claims 3-5, 8-20, 27-28, 39-40, and 42.

In addition to these absent element in the claims, *Tobey* is further missing other claim elements, including, among other things:

Claim 9: (a) mixing a food source in the composition.

Claim 10: (a) mixing a food source in the composition, (b) the food source being dried brewers yeast, (c) mixing a deodorant in the composition, and (d) mixing a coloring agent in the composition;

⁶ Claims 35-38 and 41, which the Examiner also rejected, have been deleted without prejudice herein.

Claim 11: (a) mixing a food source in the composition, (b) mixing a deodorant in the composition, (c) the food source is mixed in a range from about 0.1% to about 5% by weight, and (d) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight.

Claim 12: (a) mixing a food source in the composition, (b) the food source being dried brewers yeast, (c) mixing a deodorant in the composition, (d) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight, and (e) the dried brewers yeast is in the composition in a range from about 0.2% to about 1% by weight.

Claim 13: (a) mixing a food source in the composition, (b) the food source being dried brewers yeast, (c) mixing a deodorant in the composition, (d) mixing a coloring agent in the composition, (e) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight, (f) the dried brewers yeast is in the composition in a range from about 0.2% to about 1% by weight, and (g) the coloring agent is compatible with the bacteria.

Claim 14: (a) mixing an alcohol in the composition, and (b) the composition is in a liquid form.

Claim 15: (a) mixing an alcohol in the composition, (b) the composition is in a liquid form, (c) a monoethanolamine is mixed with the alcohol, bacteria, and surfactant, (d) the alcohol is mixed with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, and (f) the bacteria and surfactant is mixed with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Claim 16: (a) mixing an alcohol in the composition, (b) the composition is in a liquid form, (c) monoethanolamine is mixed with the alcohol, bacteria, and surfactant, (d) the alcohol is mixed with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (f) the bacteria and surfactant is mixed with the monoethanolamine and alcohol in the range from about

20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (g) the alcohol is mixed with the monoethanolamine, bacteria, and surfactant in the range from about 5% to about 20% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (h) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 5% to about 15% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, and (i) the bacteria and surfactant are mixed with the monoethanolamine and alcohol in the range from about 65% to about 90% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Claim 17: (a) mixing a food source in the composition, and (b) combining a binding agent with the bacteria and surfactant.

Claim 18: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant.

Claim 19: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant, (b) combining a filler and a food source with the bacteria and surfactant, (c) the filler is calcium carbonate combined with the food source, bacteria, and surfactant in an amount at least about 50% by weight, (d) the food source is dried brewers yeast combined with the filler, bacteria, and surfactant in a range from about 0.1% to about 5% by weight, and (e) the bacteria and surfactant are combined with the filler, and food source in a range from about 5% to about 50% by weight.

Claim 20: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant, (b) water, alcohol, and monoethanolamine are mixed with the bacteria, and surfactant, (c) water the is mixed with the alcohol, monoethanolamine, bacteria, and surfactant in the range from by at least 50%, (d) the alcohol is combined with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the monoethanolamine is combined with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (f) the bacteria and surfactant are combined with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Claim 27: (a) combining a filler and a food source with the bacteria and surfactant, (b) the filler is calcium carbonate combined with the food source, bacteria, and surfactant in an amount

at least about 50% by weight, (c) the food source is dried brewers yeast combined with the filler, bacteria, and surfactant in a range from about 0.1% to about 5% by weight, and (d) the bacteria and surfactant are combined with the filler, and food source in a range from about 5% to about 50% by weight.

Claim 28: (a) an water, alcohol, and monoethanolamine are mixed with the bacteria, and surfactant, (b) water the is mixed with the alcohol, monoethanolamine, bacteria, and surfactant in the range from by at least 50%, (c) the alcohol is combined with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (d) the monoethanolamine is combined with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the bacteria and surfactant are combined with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

As to these elements missing from *Tobey* in each of claims 3-5, 8-20, 27-28, 39-40, and 42, the remaining prior art cited by the Examiner -- *Richardson*, *Glendening*, *Horney*, *Yoshimura*, *DiTuro*, and *Davis* -- do not disclose all of the missing elements for any of these claims. Accordingly, *Tobey*, by itself, or in combination with one of these patents, does not disclose all of the features of the claimed invention.

The Examiner is respectfully reminded that, under MPEP § 707.07(f), the Examiner is required to address all material traversed by Applicant. Therefore, the Examiner is required to specifically address each and every one of Applicant's assertions that the claims are not obvious due to *Tobey* (including in combination with *Richardson*, *Glendening*, *Horney*, *Yoshimura*, *DiTuro*, or *Davis*); otherwise, the Examiner has not adequately rejected these claims and these claims are therefore patentable over the cited prior art.

2. The Objective Evidence of Nonobviousness Shows The Claimed Invention Is Not Obvious

While the above shows the nonobviousness of Applicant's invention, objective evidence of nonobviousness further supports Applicant's assertion. The Applicant has herewith attached a declaration under 37 C.F.R. § 1.132 (the "132 Declaration") showing, *inter alia*, Applicant's invention has enjoyed commercial success, has obtained unexpected results, has been

professionally approved after initial skepticism by experts, has been copied by others, and has become an industry standard. 132 Declaration, ¶¶ 1-20.

This objective evidence shows that the commercial success runs to geographically diverse channels of distribution, including both long haul passenger systems and commuter systems throughout the United States, such as New York and its surrounding area, Miami, and Dallas. 132 Declaration, ¶¶ 8 & 15-18. Furthermore, the evidence shows that the commercial success is related to the conversion from bactericide based products to the bacterial based product of the present invention. 132 Declaration, ¶ 19. Accordingly, this success is attributable to the invention of the Application and cannot be attributed to business events extraneous to the merits of the claimed invention. MPEP § 716.03(b). This is further confirmed by the evidence reflecting the cost of the bacterial based product is two to three times more expensive than the previously used bactericide based products. 132 Declaration, ¶ 19.

Objective evidence further reflects that it was unexpected that the surfactant utilized in combination with bacteria would overcome the problems of using bacterial based products in transportation recirculation tank toilet systems. 132 Declaration, ¶ 5; *see also* Application, at 5-6. Presence of an unexpected property evidences non-obviousness. *In re Chupp*, 816 F.2d 643, 645-46, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *see also* MPEP § 716.02(a).

Objective evidence further reflects that the claimed invention has been professionally approved after initial skepticism by experts. 132 Declaration, ¶¶ 10-12, 15, & 19.⁷ “Expressions of disbelief by experts constitute strong evidence of nonobviousness.” MPEP § 716.05 (*quoting Environmental Designs, Ltd. v. Union Oil of Cal.*, 713 F.2d 693, 698, 218 U.S.P.Q. 865, 869 (Fed. Cir. 1983)). When the Applicant initially presented its bacterial based product for use to overcome problems in the transportation recirculation toilet, the industry personnel whose job it was to test and procure such products were skeptical that a bacterial based product would be an effective treatment for a transportation recirculation tank toilet system. 132 Declaration, ¶ 10.

Applicants concur that prior testing had reflected problems with bacterial based products because the bacterial action generated gaseous ammonia, which was quite pungent and unpleasant for the users. 132 Declaration, ¶ 11; *see also* Application, at 5. Prior art identified by

⁷ For the Examiner's convenience, an excerpt from Exhibit A of the Declaration of Brian Doege Under 37 C.F.R. § 1.132 has been attached on a separate page to this Amendment.

Examiner further reflects such problems were known to exist when using bacterial based products. *Horney* disclosed a deodorizing and sewage treatment formulation that included a bacteria and odor suppressing agent; *Horney* expressly utilized this odor suppressing agent so as to suppress and mask any undesirable odors. *Horney*, Abstract. As noted in the Application, suppressing and masking the odors does not rid the odors that develop in the flushing liquid, they merely attempt to overwhelm them. Application, at 4. Moreover, it is well known that, as more and more human waste products are collected in the system during a period, the masking properties of the deodorant or scent become less effective. *Id.* The present Application solved this odor problem by eliminating the odors through the concurrent use of a surfactant with the bacteria. *Id.*, at 5-6. It is for this reason that a deodorizers and scents, while optional, are not necessary in the present invention. *Id.* That *Horney* is directed toward suppressing and masking these odors reflects the extent of this problem and confirms the skepticism initially directed to the invention of the Application.

However, once the present invention was tested, these same personnel deemed the bacterial based product to be a success and have indicated they recommended converting from a bactericide based product to a bacterial based product. 132 Declaration, ¶¶ 11, 15, & 19. “The skepticism of an expert, expressed before these inventors proved him wrong, is entitled to fair evidentiary weight” of nonobviousness. MPEP § 716.05 (*quoting In re Dow Chemical, Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1532 (Fed. Cir. 1988)).

Objective evidence further reflects that copying of the present invention occurred after Applicant introduced this product. 132 Declaration, ¶ 20. At least three other companies have copied Applicant’s bacterial based product for use in transportation recirculation tank toilet systems, including copying of this product by the two largest United States producers of bactericide based products. 132 Declaration, ¶ 20. That these companies have completely deviated from their past bactericide based products and are promoting bacterial based products strongly indicates the nonobviousness of the present invention. *Windsurfing Int’l Inc. v. AMF, Inc.*, 782 F.2d 995, 1000, 228 U.S.P.Q. 562, 565 (Fed. Cir. 1986).

Objective evidence further reflects that Applicant’s invention has become an industry standard. 132 Declaration, ¶¶ 16-17. Metro-North required all bidders to sell treatments for use in transportation recirculation tank toilet systems to utilize bacterial based products, and more

particularly, specifically set the standard as Applicant's MTC-2010-T product, an embodiment of the claimed invention. 132 Declaration, ¶¶ 16-17. Evidence that an invention has become an industry standard is again a compelling indication of nonobviousness. *In re Hayes Microcomputer Prods. Inc. Patent Litigation*, 982 F.2d 1527, 1540, 25 U.S.P.Q.2d 1241, 1251 (Fed. Cir. 1992); *see also Perkin-Elmer Corp. v. Computervision, Corp.*, 732 F.2d 888, 895, 221 U.S.P.Q. 669, 675 (Fed. Cir. 1984).

Therefore, the Applicant respectfully asserts that this objective evidence substantiates the nonobviousness of Applicant's invention.

Applicant respectfully reminds the Examiner that when objective evidence of nonobviousness are properly presented, this evidence must be considered. *In re Sernaker*, 702 F.2d 989, 996, 217 U.S.P.Q. 1, 7 (Fed. Cir. 1983). Moreover, such evidence can "often serve as insurance against the insidious attraction of the siren hindsight" when evaluating the prior art. *W. L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983).

Therefore, because *Tobey* is not prior art, because *Tobey* alone and in combination with *Richardson*, *Glendening*, *Horney*, *Yoshimura*, *DiTuro*, or *Davis* does not teach or suggest all of the limitations of any of the rejected claims, and because the objective evidence shows nonobviousness of these claims, Applicant respectfully asserts that all of Claims 3-5, 8-20, 27-28, 39-40, and 42 are allowable under 35 U.S.C. §§ 102 and 103 over *Tobey* and the references to which the Examiner has combined with *Tobey*.

V. REJECTIONS UNDER 35 U.S.C. § 103 BASED UPON HORNEY

In Paper No. 7, The Examiner rejected Claims 3-5, 8-20, 39-40, and 42 under 35 U.S.C. § 103 as being obvious over *Horney*.⁸ Paper No. 7, at 7.

Applicant respectfully traverses these § 103 rejections.

A. Claims 3-4, 8, and 11-20 Are Not Anticipated by *Horney*

As noted above for *Tobey*, *Horney* does not disclose or teach the recirculation of the flushing liquid, a recirculation tank toilet system, and a tank toilet system that is selected from

⁸ Claims 35-38 and 41, which the Examiner also rejected, have been deleted without prejudice herein.

the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems. All of these are elements of claims 3-5, 8-20, 27-28, 39-40, and 42. Rather, *Horney* discloses a deodorizing and sewage treatment formulation. *Horney*, Title.

In addition to these absent element in the claims, *Horney* is further missing other claim elements, including, among other things:

Claim 3: (a) mixing the surfactant with the bacteria in a weight ratio charged to the tank toilet systems from about 10% to about 50%.

Claim 4: (a) mixing the surfactant with the bacteria in a weight ratio charged to the tank toilet systems from about 10% to about 30%.

Claim 9: (a) mixing a filler in the composition, and (b) mixing a food source in the composition.

Claim 10: (a) mixing a filler in the composition, (b) mixing a food source in the composition, (c) the filler being calcium carbonate and/or sodium carbonate, and (d) the food source being dried brewers yeast.

Claim 11: (a) mixing a filler in the composition, (b) mixing a food source in the composition. (c) the food source is mixed in a range from about 0.1% to about 5% by weight, and (d) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight.

Claim 12: (a) mixing a filler in the composition, (b) mixing a food source in the composition. (c) the food source being dried brewers yeast, (d) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight, and (e) the dried brewers yeast is in the composition in a range from about 0.2% to about 1% by weight.

Claim 13: (a) mixing a filler in the composition, (b) mixing a food source in the composition. (c) the food source being dried brewers yeast, (d) the deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight, (e) the dried brewers yeast is in the composition in a range from about 0.2% to about 1% by weight, and (f) the coloring agent is compatible with the bacteria.

Claim 14: (a) mixing an alcohol in the composition.

Claim 15: (a) mixing an alcohol in the composition, (b) a monoethanolamine is mixed with the alcohol, bacteria, and surfactant, (c) the alcohol is mixed with the monoethanolamine,

bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (d) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, and (e) the bacteria and surfactant is mixed with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Claim 16: (a) mixing an alcohol in the composition, (b) monoethanolamine is mixed with the alcohol, bacteria, and surfactant, (c) the alcohol is mixed with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (d) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the bacteria and surfactant is mixed with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (f) the alcohol is mixed with the monoethanolamine, bacteria, and surfactant in the range from about 5% to about 20% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (g) the monoethanolamine is mixed with the alcohol, bacteria, and surfactant in the range from about 5% to about 15% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, and (h) the bacteria and surfactant are mixed with the monoethanolamine and alcohol in the range from about 65% to about 90% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Claim 17: (a) mixing a filler in the composition, (b) mixing a food source in the composition, and (c) combining a binding agent with the bacteria and surfactant.

Claim 18: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant.

Claim 19: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant, (b) combining a filler and a food source with the bacteria and surfactant, (c) the filler is calcium carbonate combined with the food source, bacteria, and surfactant in an amount at least about 50% by weight, (d) the food source is dried brewers yeast combined with the filler, bacteria, and surfactant in a range from about 0.1%

to about 5% by weight, and (e) the bacteria and surfactant are combined with the filler, and food source in a range from about 5% to about 50% by weight.

Claim 20: (a) repeatedly removing the flushing liquid from the system and recharging it with a new flushing liquid, bacteria, and a surfactant, (b) water, alcohol, and monoethanolamine are mixed with the bacteria, and surfactant, (c) water the is mixed with the alcohol, monoethanolamine, bacteria, and surfactant in the range from by at least 50%, (d) the alcohol is combined with the monoethanolamine, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (e) the monoethanolamine is combined with the alcohol, bacteria, and surfactant in the range from about 1.5% to about 60% by weight of the alcohol, monoethanolamine, bacteria, and surfactant, (f) the bacteria and surfactant are combined with the monoethanolamine and alcohol in the range from about 20% to about 97% by weight of the alcohol, monoethanolamine, bacteria, and surfactant.

Accordingly, *Horney* does not disclose all of the features of the claimed invention. The Examiner is respectfully reminded that, under MPEP § 707.07(f), the Examiner is required to address all material traversed by Applicant. Therefore, the Examiner is required to specifically address each and every one of Applicant's assertions that the claims are not obvious due to *Horney*; otherwise, the Examiner has not adequately rejected these claims and these claims are therefore patentable over the cited prior art.

B. The Objective Evidence of Nonobviousness Shows The Claimed Invention Is Not Obvious

While the above shows the nonobviousness of Applicant's invention, the objective evidence of nonobviousness again further supports Applicant's assertion. 132 Declaration, ¶¶ 1-20. As discussed in more detail above, Applicant has presented evidence confirming Applicant's invention has enjoyed commercial success, has obtained unexpected results, has been professionally approved after initial skepticism by experts, has been copied by others, and has become an industry standard. 132 Declaration, ¶¶ 1-20.

Therefore, the Applicant respectfully asserts that the objective evidence again substantiates the nonobviousness of Applicant's invention.

Therefore, because *Horney* does not teach or suggest all of the limitations of any of the rejected claims, and because the objective evidence shows nonobviousness of the present

invention, Applicant respectfully asserts that claims 3-5, 8-20, 39-40, and 42 are allowable under §103 over *Horney*.

VI. CONCLUSION

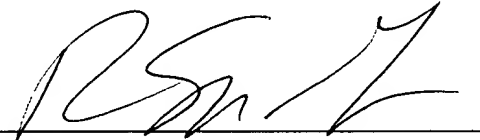
As a result of the foregoing, it is asserted by Applicant that the remaining Claims in the Application are in condition for allowance, and respectfully request an early allowance of such Claims.

Applicant respectfully requests that the Examiner call Applicant's attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.

Attorneys for Applicants

By: 

Ross Spencer Garsson
Reg. No. 38,150
5400 Renaissance Tower
1201 Elm Street
Dallas, Texas 75270-2199
(512) 370-2870

Version T Show Changes Made To Title

**A METHOD FOR BACTERIALLY TREATING [SMALL-]TANK TOILET
SYSTEMS AND APPARATUS FOR USING SAME**

Version To Show Changes Made To Claims

3. (Twice Amended) A method for treating a [small-]tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the [small-]tank toilet system with flushing [fluid] liquid, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems; [and]

(c) combining the bacteria, the surfactant, and the flushing [fluid] liquid, wherein the bacteria is selected from the group consisting of *Bacillus licheniformis*, *Pseudomonas fluorescens*, *Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida* and wherein the weight ratio of the bacteria [is combined with] and the surfactant [in a weight ratio] (weight of the bacteria:weight of the surfactant) charged to the tank toilet system is from about 10% to about 50%.

4. (Twice Amended) The method of claim 3 wherein the [a] weight ratio (weight of the bacteria:weight of the surfactant) is from about 10% to about 30%.

5. (Twice Amended) A method for treating a [small-]tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the [small-]tank toilet system with flushing [fluid] liquid; and

(c) combining the bacteria, the surfactant, and the flushing [fluid] liquid, wherein the bacteria is selected from the group consisting of *Bacillus licheniformis*, *Pseudomonas fluorescens*, *Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida* and wherein the [small-]tank toilet system,

(i) is a recirculation tank toilet system, and

(ii) is selected from the group consisting of airplane toilet systems, bus toilet systems, [camper toilet systems,] and train toilet systems[, boat toilet systems, and free standing portable toilet systems].

8. (Twice Amended) A method for treating a [small-]tank toilet system comprising the steps of:

- (a) selecting a bacteria and a surfactant;
- (b) charging the [small-]tank toilet system with flushing [fluid] liquid, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;
- (c) combining the bacteria, the surfactant, and the flushing [fluid] liquid; and
- (d) mixing the bacteria and surfactant into a composition before combining it with the flushing [fluid] liquid, wherein said composition is a form selected from the group consisting of a liquid form, a powder form, and a solid block-tablet form.

11. (Twice Amended) The method of claim 9 wherein:

- (a) the filler is mixed in the composition at least about 50% by weight;
- (b) the food source is mixed in a range from about 0.1% to about 5% by weight;
- (c) [the] a deodorant is mixed in the composition in a range from about 0.05% to about 2% by weight; and
- (d) the bacteria and the surfactant are mixed in the composition in the range from about 5% to about 50% by weight.

12. (Twice Amended) The method of claim 9 wherein:

- (a) the filler is mixed in the composition with the range from about 50% to about 80% by weight;
- (b) the food source is dried brewers yeast in the composition in the range from about 1% to about 2% by weight;
- (c) [the] a deodorant is mixed in the composition in a range from about 0.2% to about 1% by weight; and
- (d) the bacteria and the surfactant are mixed in the composition in the range of about 15% to about 20% by weight.

13. (Amended) The method of claim 12 further comprising the step of combining a coloring agent with the bacteria and the surfactant, wherein the coloring agent is compatible with bacteria.

18. (Twice Amended) A method for treating a [small-]tank toilet system comprising the steps of:

(a) removing a first flushing [fluid] liquid from a [small-]tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(b) charging the [small-]tank toilet system with a second flushing [fluid] liquid;

(c) selecting a bacteria, which bacteria is selected from the group consisting of *Bacillus licheniformis*, *Pseudomonas fluorescens*, *Alcaligenes latus*, *Bacillus subtilis*, and *Pseudomonas putida*;

(d) selecting a surfactant for combining with the bacteria;

(e) charging the [small-]tank toilet system with the bacteria and the surfactant;

(f) repeating steps (a)-(e).

19. The method of claim 18 further comprising the steps of:

(a) combining a filler[,], and a food source[,], with the bacteria and the surfactant, wherein

(i) the filler is calcium carbonate and is combined with the food source, [the methyl salicylate,] the bacteria, and the surfactant [by] in an amount of at least about 50% by weight;

(ii) the food source is dried brewers and is combined with the filler, [the methyl salicylate,] the bacteria, and the surfactant in a range from about 0.1% to about 5% by weight; and

(iii) the bacteria and the surfactant with the filler[,], and the food source[,], and the methyl salicylate] in a range from about 5% to about 50% by weight.

27. (Twice Amended) An apparatus for treating human waste products comprising:
- (a) a [small-]tank toilet system;
 - (b) a flushing [fluid] liquid charged into the [small-]tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;
 - (c) a bacteria and a surfactant combined with the flushing [fluid] liquid; and
 - (d) a filler and[,] a food source[,] combined with the bacteria and the surfactant, wherein
 - (i) the filler is calcium carbonate and is combined with the food source, [the methyl salicylate,] the bacteria, and the surfactant [by] in an amount of at least about 50% by weight;
 - (ii) the food source is dried brewers yeast and is combined with the filler, [the methyl salicylate,] the bacteria, and the surfactant in a range from about 0.1% to about 5% by weight; and
 - (iii) the bacteria and the surfactant with the filler and[,] the food source[,] in a range from about 5% to about 50% by weight.
28. (Twice Amended) An apparatus for treating human waste products comprising:
- (a) a [small-]tank toilet system;
 - (b) a flushing [fluid] liquid charged into the [small-]tank toilet system, wherein the tank toilet system is a recirculation tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;
 - (c) a bacteria and a surfactant combined with the flushing [fluid] liquid; and
 - (d) water, alcohol, and monoethanolamine, combined with the bacteria and the surfactant, wherein
 - (i) water is combined with the alcohol, the monoethanolamine, the bacteria, and the surfactant, by at least about 50% by weight;

(ii) the alcohol is combined with the monoethanolamine, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant;

(iii) the monoethanolamine is combined with the alcohol, the bacteria, and the surfactant in the range from about 1.5% to about 60% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant; and

(iv) the bacteria and the surfactant are combined with the alcohol and monoethanolamine in the range from about 20% to about 97% by weight of the alcohol, the monoethanolamine, bacteria, and surfactant.

39. (Amended) An apparatus for treating human waste products comprising:

(a) a tank toilet system, wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, [camper toilet systems,] and train toilet systems[, boat toilet systems, and free standing portable toilet systems]; and

(b) a flushing [fluid] liquid charged into the tank toilet system, wherein the tank toilet system is a recirculation tank toilet system;

(c) a bacteria charged into the tank toilet system for decomposing human waste product in the tank toilet system to form byproduct[, wherein the tank toilet system has a size such that the amount of the byproduct formed by the decomposing of the human waste product has an odor to be controlled]; and

(d) a surfactant charged into the tank toilet system, wherein the bacteria and surfactant are combined with the flushing liquid[for controlling] in an amount capable of neutralizing the byproduct odor.

42. (Amend) A method for treating a [small-]tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the [small-]tank toilet system with flushing [fluid] liquid, wherein the tank-toilet system is a recirculation [small-]tank toilet system and wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems; and

(c) combining the bacteria, the surfactant, and the flushing [fluid] liquid.

43. (New) The method of claim 42 wherein the tank toilet system has a capacity at most about 120 gallons.

44. (New) A method for treating a tank toilet system comprising the steps of:

(a) selecting a bacteria and a surfactant;

(b) charging the tank toilet system with a flushing liquid, wherein the tank toilet system is a recirculation tank toilet system, wherein the tank toilet system is selected from the group consisting of airplane toilet systems, bus toilet systems, and train toilet systems;

(c) combining the bacteria and the surfactant with the flushing liquid;

(d) monitoring the tank system to determine the flushing liquid should be removed;

(e) removing the flushing liquid in response to the determining step; and

(f) repeating steps (a)-(e).

45. (New) The method of claim 44 wherein the monitoring step comprises inspecting level of liquid in the tank toilet system.

46. (New) The method of claim 44 wherein the monitoring step is a time basis.

47. (New) The method of claim 46 wherein the time basis is at most three days.

48. (New) The method of claim 44 wherein the monitoring step is a trip basis.

Excerpts from Exhibits A-D of the Declaration of Brian Doege Under 37 C.F.R. § 1.131**Exhibit A, first paragraph**

Spoke with Mark - he and Mike discussed problem Amtrak is having with their commuter toilets. They are using a pouch product – dissolving for toilets. Have odor problem and disposal. Can we fix?

Exhibit B, third, fourth and fifth paragraphs

Spoke to Mark re Amtrak problems, got details on Recirculation toilets in Chicago – They are smaller tanks - and use black water to flush.

Need: perfume to disguise odor
dye to disguise poop

Current products is bactericide - can we use active bacteria? Odor problem is chief complaint of customer.

I need to talk Saul to determine if we can produce or modify our tank cleaner for daily maintenance.

Exhibit C, second paragraph

Talked to Saul discussed what we would need to do to modify BMTC-7 for the Amtrak daily maintenance problem – discussed buffering effect of surfactants on the ammonia and other malodors in the tank – He suggest boosting amount of microbial in formula. – Can we use MTC-2000 as carrier – should not be a problem. We will arrange test with Amtrak.

Exhibit D, third paragraph

Mark – Mike talked to Amtrak Beech Grove. They very pleased with products – he to arrange test for our MTC-2010 liquid with either Chicago or Washington - need to get with alteria head of daily maintenance. – Told Mark we had "HC" level of microbes in new liquid see if they like results.

Excerpt from Exhibit A of the Declaration of Brian Doege Under 37 C.F.R. § 1.132**Exhibit A, third paragraph**

Mark – Mike talked to Amtrak Beech Grove. They very pleased with products – he to arrange test for our MTC-2010 liquid with either Chicago or Washington - need to get with alteria head of daily maintenance. – Told Mark we had "HC" level of microbes in new liquid see if they like results.

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